DRAFT

North of the Delta
Offstream Storage Investigation

Progress Report

Appendix C: Survey for the Valley Elderberry Longhorn Beetle at Four Proposed Offstream Storage Reservoir Locations

June 2000

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Investigations

CALFED
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Appendix C: Survey for the Valley Elderberry Longhorn Beetle at Four Proposed Offstream Storage Reservoir Locations

Report prepared by:
Gail Kuenster
Environmental Specialist II

With assistance from:
MaryAnn Griggs
Fish and Wildlife Scientific Aid

Ryan Martin
Fish and Wildlife Scientific Aid

Michael Serna
Senior Delineator

California Department of Water Resources
Division of Planning and Local Assistance, Northern District

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Summary

This report summarizes an assessment of the valley elderberry longhorn beetle within the Sites, Colusa Cell, Newville, and Red Bank reservoir sites in 1998 and 1999.

The valley elderberry longhorn beetle is listed by the U.S. Fish and Wildlife Service as "threatened, with Critical Habitat". Although there were no known populations within the proposed reservoir sites, habitat exists and known populations occur nearby.

Surveys focused on identifying potential habitat for VELB, the number of elderberry stems found measuring 1 inch or more, and the presence of exit holes. Aerial photos were used to determine which drainages should be field checked within the grassland habitats of the Sites, Colusa Cell, and Newville reservoir areas. All drainages were field checked within the Red Bank Reservoir site.

Habitat for VELB occurs at each of the four proposed reservoir sites. VELB emergence holes were found within the proposed Sites and Newville reservoir areas. No emergence holes were found within the proposed Colusa and Red Bank project areas. No adult beetles were observed at any of the proposed reservoir sites.

Surveys are valid for a two-year period according to U.S. Fish and Wildlife guidelines. Potential reservoir sites will need to be resurveyed before a final report is produced. Areas not surveyed prior to this report, such as areas with restricted access, conveyance routes, road relocations, recreational areas etc., will need to be surveyed. Analyses will also be needed to predict how possible changes in flow regimes within the channels and associated savannas downstream will affect elderberry survival and distribution.

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Introduction

The Department of Water Resources is currently evaluating the feasibility of constructing an offstream water supply reservoir at one of four locations on the west side of the Sacramento Valley in cooperation with CALFED. These locations include Sites Reservoir in western Colusa County, Colusa Reservoir in western Glenn and Colusa Counties, Thomes-Newville Project in western Tehama and Glenn Counties, and the Red Bank Project in western Tehama County (Figure 1).

The valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* Fisher, was listed by the U.S. Fish and Wildlife Service as "threatened, with Critical Habitat" on August 10, 1980 (Federal Register 45:52803-52807) (Figure 2). The beetle is endemic to riparian systems along the margins of rivers and streams, occasional seeps, and in adjacent grassy savannas in the Sacramento and San Joaquin Valleys. VELB feeds on two species of elderberry (*Sambucus mexicana* Presl. - Figure 3 and 4, and *S. racemosa* L. var. *microbotrys* Rydb.). The adult female beetle deposits eggs in the crevices of the bark of living plants. The larvae bore into the pith of the larger elderberry stems where the majority of the animal's life span is spent. Following pupation in the spring, the adult beetle opens an emergence hole in the bark through which it exits (Figure 5). Adults feed on foliage and are present from March through early June. Because the adult stage is short lived, surveys techniques focus on the presence of emergence holes for evidence of VELB. VELB emergence holes have been observed in shoots or branches with diameters as small as 0.5 inches (13mm) but are more common in older branches (Barr 1991, USFWS 1984). Barr (1991) found exit holes most often in older mature healthy plants and rarely in young or stressed individuals. Exit holes are circular or slightly oval and are usually 7-10 mm in diameter. VELB is the only insect species known to inhabit live elderberry wood and/or make exit holes of a similar size and shape in the Central Valley (Barr 1991).

The VELB is known to occur throughout the California Central Valley and it is associated foothills from the valley floor up to 3,000-foot elevation. Although there were no known VELB populations within the proposed reservoirs, habitat was known to exist within the project area and known VELB locations were recorded nearby. According to Jones and Stokes (1986) "potential VELB habitat is defined by the presence of mature and immature elderberry shrubs (*Sambucus* spp.)."

The State and federal Endangered Species Acts require that any analysis of a project that could result in a "take " of a State or federally "listed" species include an evaluation of alternatives, consultation with the respective regulatory agencies, and the development of mitigation and avoidance measures. This not only includes the individual species but their habitats as well. Surveys for VELB are valid for a period of two years. All beetle habitat that cannot be avoided will be considered impacted and appropriate mitigation, as set forth in the Mitigation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1996) and in consultation with the USFWS, must be implemented.

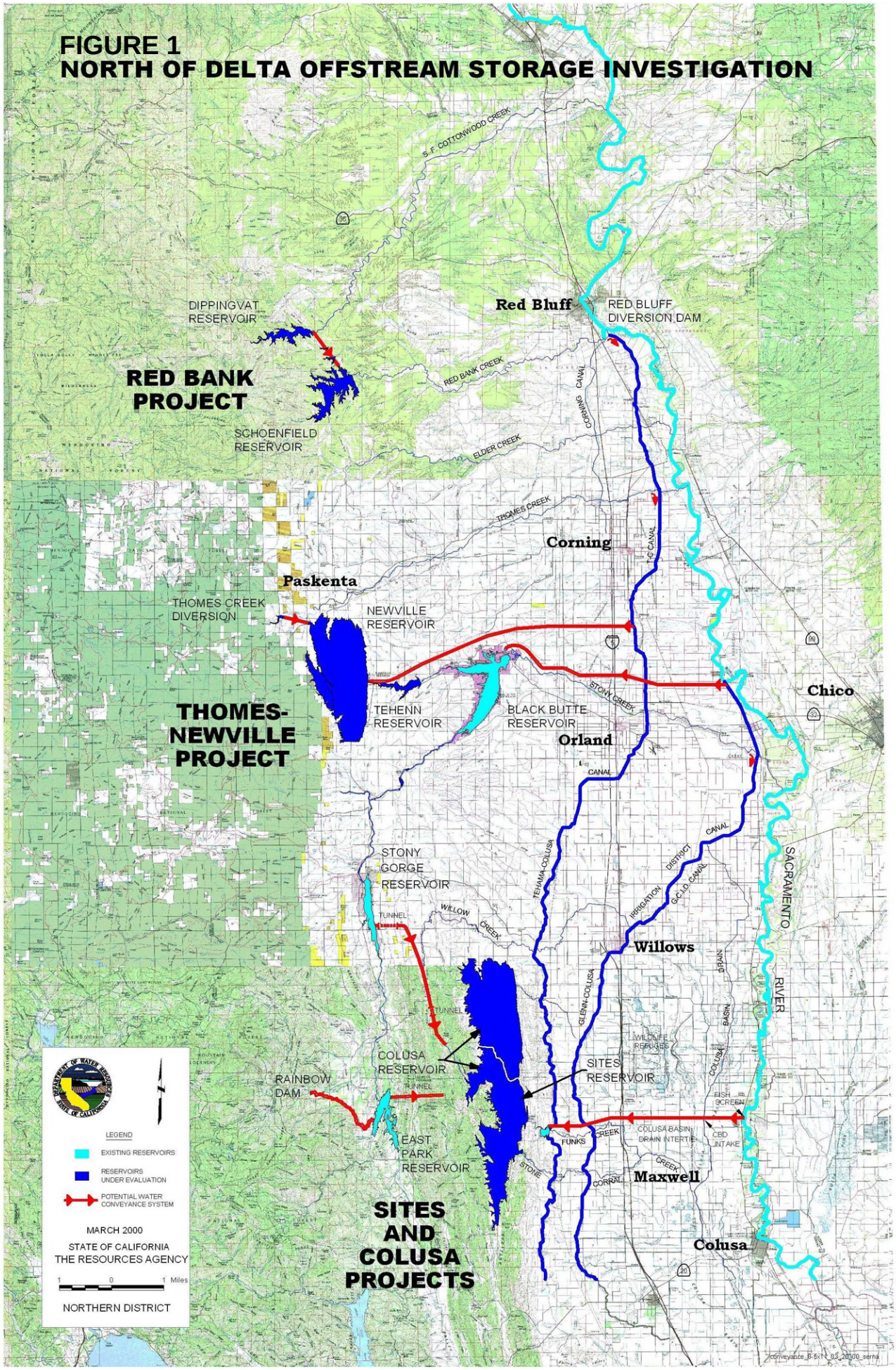
FIGURE 1
NORTH OF DELTA OFFSTREAM STORAGE INVESTIGATION
DIPPINGVAT RESERVOIR
RED BANK PROJECT
SCHOENFIELD RESERVOIR
S.F. COTTONWOOD CREEK
RED BANK CREEK
ELDER CREEK
Red Bluff
RED BLUFF DIVERSION DAM
CORNING CANAL
THOMES CREEK
Corning
T.C. CANAL
Paskenta
THOMES CREEK DIVERSION
NEWVILLE RESERVOIR
THOMES-NEWVILLE PROJECT
TEHENN RESERVOIR
BLACK BUTTE RESERVOIR
STONY CREEK
Orland
Chico
CANAL
STONY GORGE RESERVOIR
TUNNEL
WILLOW CREEK
TEHAMA-COLUSA CANAL
GLENN-COLUSA IRRIGATION DISTRICT CANAL
Willows
SACRAMENTO RIVER
COLUSA BASIN DRAIN
WILDLIFE REFUGES
COLUSA RESERVOIR
RAINBOW DAM
SITES RESERVOIR
FISH SCREEN
EAST PARK RESERVOIR
FUNKS CREEK
COLUSA BASIN DRAIN INTERTIE
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Figure 2. Valley Elderberry Longhorn Beetle

Figure 3. Elderberry Plant With a Single Trunk

Figure 4. Elderberry Stand

Figure 5. Valley Elderberry Longhorn Beetle Emergence Hole

Methods

A survey of all potential reservoir sites for the VELB and its habitat was conducted during the periods January through July 1998 and April through June 1999. Surveys focused on identifying potential habitat for VELB, the number of elderberry stems found measuring more than one inch, and the presence of exit holes. A total of 45 days was spent field surveying the drainages.

Sites, Colusa, and Newville proposed reservoir areas are comprised mainly of non-native grassland with scattered oak woodland on the upland areas. Riparian vegetation along stream channels is sparse, especially within the Colusa

Reservoir. The larger streams at Sites and Newville reservoir areas are bordered by scattered stands of mature cottonwood, oak, willow, and elderberry. However, the majority of stream channels lacks any riparian vegetation and consists mainly of grassland vegetation with an occasional cottonwood or willow. Aerial photographs were used to identify the drainages, or portions thereof, in the proposed project areas with potential VELB habitat. All drainage areas and the adjacent savannas were walked and checked for the presence of VELB habitat, with the exception of those drainages bordered solely by grasslands and those areas restricted by landowners.

Within the proposed Red Bank Project area, foothill woodland habitat, with moderate to dense canopy cover, comprises 81 percent of the area. Riparian habitat along the major stream channels is more continuous than that at the proposed Sites, Colusa, and Newville reservoir areas. Vegetation along the lesser channels consists of scattered oaks, cottonwoods, willows, or elderberries. All the stream channels and adjacent savannas within the Red Bank Project area were walked and checked for the presence of VELB habitat except for portions where access was restricted by landowners.

According to VELB survey procedures outlined in the USFWS 1996 report on mitigation guidelines, all stems measuring 1 inch or more at ground level were recorded and checked for emergence holes. The elderberry plants were examined by scanning the foliage and branches for adult beetles and the trunks and branches for exit holes. Growth forms of elderberry plants throughout the project area are varied. A stand may consist of a single individual with multiple trunks, several individuals growing in close proximity, or a tree-like individual with a single large trunk. Multiple trunks were counted as individual stems if it was apparent that the branching was off the root mass and exposed due to recent erosion.

Results

Habitat for VELB occurs at each of the four proposed reservoir sites. VELB emergence holes were found within the proposed Sites and Newville reservoir areas. No emergence holes were found within the proposed Colusa and Red Bank project areas. No adult beetles were observed, although the majority of surveys were conducted during the time the adult beetles would be present. The physical condition of the elderberry plants varied from poor to good. Table 1 lists the number of stems counted at each reservoir site, and the number and percentage of stems with emergence holes.

Sites Project Area

Six hundred seventy-two stems were counted within the proposed Sites Project area. Emergence holes were found on 18 individual stems. The plants within this area tend to be individuals with multiple trunks and range from unhealthy stressed plants to occasional large healthy individuals. The majority of plants at this site and the riparian vegetation in general tend to be in poor condition.

Colusa Project Area

Only one stand of elderberry was found within the proposed Colusa Cell. This stand consisted of 38 stems and was found near a seep on a steep slope at the reservoir's eastern edge. Drainages where elderberry plants would typically be found were too dry and degraded due to natural causes or downcutting to support elderberry plants. Very few associated riparian species (cottonwood and willow) were found along the drainages.

Newville Project Area

Five hundred fifty-two stems have been counted in the proposed Newville project area. Emergence holes have been found in 42 stems. The plants at this site tend to be large healthy individuals with single or multiple trunks. Most occurred along the major drainages, but some individuals were found at the edges of associated grassy savannas and even upslope along the dryer margins.

Table 1. Number of Elderberry Stems and Emergence Holes Found Within Each Proposed Reservoir Site

Reservoir Site	Number of elderberry stems	Number of stems with emergence holes	Percentage of stems with emergence holes
Sites	672	18	2.7
Colusa	38	0	0
Newville	552	42	7.6
Red Bank	1,001	0	0
Schoenfield	791	0	0
Lanyan	0	0	0
Bluedoor	0	0	0
Dippingvat	210	0	0

Red Bank Project Area

Dippingvat. Two hundred ten individuals were found at the proposed Dippingvat reservoir area. No emergence holes were found. Individuals at this site tend to be older with a single trunk and in good condition.

Bluedoor and Lanyan. No elderberry plants were found at either of these proposed reservoir sites; however, potential elderberry habitat does exist at both areas.

Schoenfield. Seven hundred ninety-one individual stems were counted at the proposed Schoenfield Reservoir site. No emergence holes were found. The majority of plants are healthy and consist of both single individuals with multiple trunks and tree-like individuals. They tend to occur along the savannas and edges of Red Bank Creek but some were found upslope on the dryer hillsides and drainages.

Mitigation Guidelines

Guidelines have been issued by USFWS to assist in developing measures to mitigate adverse effects on VELB if complete avoidance is not possible. Surveys are valid for a period of two years. Elderberry plants are to be transplanted if they cannot be avoided. However, at the discretion of the USFWS, a plant that would be extremely difficult to move because of access problems may be exempted from transplantation (USFWS 1996). Planting of additional seedling or cuttings may be required under the mitigation guidelines, depending upon the absence or percentage of elderberry plants with emergence holes found in the project area. Elderberry plants with no beetle exit holes are planted at a ratio of 2:1. Elderberry plants with beetle holes in 50 percent or fewer of the plants are planted at a ratio of 3:1. And elderberry plants with beetle holes in more than 50 percent of the plants are planted in the ratio of 5:1. In addition, a mix of native plants (cottonwood, willow, etc.) associated with the elderberry shrubs at the project site are to be planted at a ratio of at least one specimen of native tree and shrub species for every elderberry plant (seedling or cutting).

Discussion

Off-site mitigation for elderberry plant impacts will be required for any of the proposed reservoirs. This mitigation will include acquisition of suitable land, transplantation of existing elderberry bushes, and planting of cuttings of both elderberries and associated native plants. The USFWS requires the mitigation area provide at least 1,800 square feet for each transplanted elderberry shrub, with as many as five elderberry cuttings or seedlings and up to five associated natives. This planting density is primarily for riparian forest habitats. If the mitigation site is an open habitat, as is the case for the proposed Sites, Colusa, and Newville Reservoirs, more area may be needed. Watering basins will also be needed at each site. The mitigation area should be protected in perpetuity as habitat for the valley elderberry longhorn beetle, which would require continuing funding, management, protection, and monitoring.

The proposed Colusa Project area had the least number of individual elderberry plants and less suitable elderberry habitat, thus mitigation would be minimal for this site. Sites, Newville, and Red Bank reservoir sites would require extensive replanting of elderberry plants as well as planting of seedlings and cuttings of both elderberries and associated species such as cottonwood and willow. Many of the plants within the Sites and Newville reservoir areas are accessible and could be transplanted. However, because of the steepness of the terrain within the Red Bank project area, transplantation of the elderberry shrubs would be more difficult.

The elderberry plants within the proposed Newville and Red Bank project areas tend to be healthier and less stressed than the plants at the Sites Reservoir area. The associated riparian forest is also best developed within the proposed Red Bank Reservoir area. The condition of the riparian vegetation and elderberry plants within the proposed Sites Reservoir was generally worse than that at Newville Reservoir.

The numbers of elderberry plants within the proposed Sites and Newville project areas is similar, thus the mitigation area required would be approximately

the same. However, although the Red Bank Project area is much smaller than the Sites or Newville areas, there were almost twice as many elderberry stems. This in turn would double the off-site mitigation area required for the Red Bank Project.

Surveys are valid for a two-year period according to USFWS guidelines because of the potential for the adult female beetles to lay their eggs in different elderberry plants from which they emerged. Field surveys will need to be conducted again before a final report is produced. In addition, areas not surveyed prior to this report, such as areas with restricted access, conveyance routes, road relocations, recreation, etc. will need to be surveyed. Analyses will also be needed to predict how possible changes in water regimes within the channels and associated savannas downstream of potential reservoir areas will affect elderberry survival and distribution.

Mitigation requirements for each of the proposed reservoir sites will need to be discussed with the USFWS. Contact with appropriate USFWS personnel has already been initiated by telephone. Survey methodologies have been discussed and approved.

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State of California, Gray Davis, Governor

The Resources Agency, Mary D. Nichols, Secretary for Resources

Department of Water Resources, Thomas M. Hannigan, Director

Steve Macaulay, Chief Deputy Director

Raymond D. Hart, Deputy Director

Stephen L. Kashiwada, Deputy Director

L. Lucinda Chipponeri, Assistant Director for Legislation

Susan N. Weber, Chief Counsel

Division of Planning and Local Assistance, William J. Bennett, Chief

This bulletin was prepared under the direction of
Integrated Storage Investigation, Naser J. Bateni, Chief
Offstream Storage Investigation, Glen S. Pearson, Chief

by
David J. Bogener, Environmental Specialist IV

assisted by
Michael Serna, Senior Delineator
Mark Dombrowski, Junior Engineering Techician
Don Schroeder, Fish Wildlife Scientific Aide

State of California
The Resources Agency
Department of Water Resources
Division of Planning and Local Assistance